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ANTIMICROBIAL RESISTANCE PATTERN IN WOMEN WITH POSITIVE URINE CULTURE.

Hypothesis / aims of study

Urinary tract infection (UTI) is a very common bacterial disease in women. It is reported nearly 1 in 3 women has at least 1 episode of UTI requiring antimicrobial therapy by the age of 24 years [1]. Among common risk factors, beside of sexual activity, general health status, diabetes, pregnancy and history of UTI in past are commonly cited. Variety of clinical manifestations range from simple, uncomplicated cystitis to severe urosepsis. Community-associated urinary tract infection occurs mainly in women population and in self-reported survey almost 10.8% of women declare to have UTI symptoms within last 12 months. Fast initiation of appropriate empirical treatment requires a good knowledge of epidemiological data concerning sensitivity of uropathogens to antibacterial agents. Majority of affected women attends physicians' offices mainly general practitioners [2]. The aim of our study was to evaluate total drug resistance in urine samples culture collected from women without recurrent UTIs (primary infection as indicated by medical history) in outpatient clinic.

Study design, materials and methods

The retrospective study consisted of 4453 positive urine samples collected from women who underwent urinary analysis in ambulatory care between 2013-2015 due to UTI symptoms. Samples were considered as positive if bacterial culture growth was more than $\times 10^5$ CFUs/mL. Patients were divided into two study groups: ≤ 50 years old (premenopausal group; n=2748) and >50 years old (postmenopausal group; n=1705). Statistical analysis was performed with STATISTICA 12.0, using the χ^2 test, a $p < 0.05$ was considered statistically significant.

Results:

The main pathogens found in urine samples were *Escherichia coli* (65.5%) followed by *Enterococcus faecalis* (12.2%), *Klebsiella pneumoniae* (4.7%) and *Proteus mirabilis* (4.2%). Data concerning drug resistance (independently of bacterial pattern) in urine culture samples in analysed groups of patients are presented in Table 1.

Table 1. Drug resistance pattern in urine culture samples collected from women.

Group of antimicrobial drugs	Resistance in entire population (%)	Resistance in samples collected from women ≤ 50 years old (%)	Resistance in samples collected from women >50 years old (%)	Difference in resistance: women ≤ 50 years old vs. women >50 years old (χ^2)
Ampicillin	45.9	42.4	51.4	$\chi^2=31.4$ $p < 0.001$
Trimethoprim/ Sulfamethoxazole	22.3	18.9	27.2	$\chi^2=35.1$ $p < 0.001$
Ciprofloxacin	16.2	10.8	24.2	$\chi^2=117.7$ $p < 0.001$
Amoxicillin + clavulanic acid	15.3	12.3	18.9	$\chi^2=25.1$ $p < 0.001$
Nitrofurantoin	12.5	8.9	18.0	$\chi^2=65.5$ $p < 0.001$
Cefalexin	10.5	8.4	13.5	$\chi^2=30.8$ $p < 0.001$
Cefuroxime	7.8	5.7	10.8	$\chi^2=31.1$ $p < 0.001$

Interpretation of results

Drug resistance to commonly occurring uropathogens is increasing with age. The results of our study suggest that ampicillin should be avoided in the initial treatment of UTI in women without urine culture results. Moreover, even currently, commonly used therapy with ciprofloxacin or combination of trimethoprim/sulfamethoxazole can be completely ineffective in almost one-fourth of postmenopausal women.

Concluding message

The initial successful treatment of urinary tract infection is very important because it helps to prevent the antibiotic resistant infections in the future. Therefore, if initial empirical treatment of UTI fails, urine culture with antibiogram should be obligatory before initiation of secondary treatment.

References

1. Dis Mon. 2003;49:53-70
2. J Urol. 2005;173:1281-7

Disclosures

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